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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

OCT 16 1991

Federal Communications Commission
Office of the Secretary

ORIGINAL
FILE

In re Petition of

AMERICAN MOBILE SATELLITE CORPORATION

)
)
) File No. RM-7806
)
)
)

Amendment of Parts 2, 22 and 25 of the
Commission's Rules to Allocate Spectrum
for the Mobile Satellite Service.

COMMENTS OF
CONSTELLATION COMMUNICATIONS, INC.

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October 16, 1991

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SUMMARY

Constellation Communications, Inc.

("CONSTELLATION"), by its attorneys, hereby submits its comments on the Petition filed by the American Mobile Satellite Corporation ("AMSC") on June 3, 1991 to re-allocate (and eventually assign) the 1616.5-1626.5 MHz band currently allocated to the radiodetermination satellite service ("RDSS"), as well as the 1515-1525 MHz band, for use by the proposed AMSC mobile satellite service ("MSS") system. In light of the failure of AMSC to establish a justification for the reassignment of RDSS frequencies to the AMSC MSS system and the technical incompatibility of the AMSC system with any LEO system, CONSTELLATION submits that the Commission must reject the AMSC petition and promptly move forward with the licensing of the proposed low earth orbit satellite systems in the RDSS bands. CONSTELLATION submits that licensing of multiple low earth orbit satellite systems in the RDSS bands, such as the ARIES™ system, will best fulfill the Commission's goals of rapidly introducing the benefits of new technology and the competitive provision of service to the public.

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A. THE COMMISSION MUST REAFFIRM ITS COMMITMENT TO
ENHANCE THE UTILIZATION OF THE RADIODETERMINATION SATELLITE
SERVICE BANDS BY IMPLEMENTATION OF LEO SYSTEMS

AMSC's proposal that the RDSS frequencies be allocated for MSS and assigned to AMSC appears to be premised, in part, on an erroneous conclusion that the radiodetermination

satellite service is not viable.^{1/} To the contrary, CONSTELLATION believes that the current set of pending applications for LEO systems demonstrates that RDSS remains viable,^{2/} and that the record to date on those applications already has established the public interest in and potential market demand for RDSS services.^{3/} These applications, including the application for CONSTELLATION's ARIES™ system, contain extensive market studies of the potential users of LEO satellite systems and brought to light the large demand for RDSS. CONSTELLATION submits that this evidence proves the importance of the RDSS bands and the need for the Commission to

^{1/} AMSC Petition, Summary at 1.

^{2/} These applications were filed by Constellation Communications, Inc., Ellipsat Corporation, Loral Cellular Systems, Corp., Motorola Satellite Communications, Inc., and TRW, Inc.

^{3/} AMSC also incorrectly assumes that none of the systems proposed in this proceeding will provide true RDSS. Unlike geostationary earth orbit ("GEO") systems, such as that proposed by AMSC, LEO systems have the inherent capability to provide RDSS. For example, a user of a LEO RDSS system can determine position using only a series of measurements of doppler frequency shifts and ephemeris data transmitted by the satellite similar to the current Transit system. The pending LEO applications propose integrated position determination as envisioned for RDSS in a technically efficient and economically sound manner. GEO systems require multiple satellites to provide radio determination services. The ability of the proposed LEO systems to provide voice communications does not detract from their capability to provide RDSS service.

encourage the development of innovative LEO technology in these bands.

What AMSC seems to overlook in its petition is the absurdity of asking for new spectrum when AMSC has been unable to make any substantial progress toward development of its own system using the frequencies already assigned to it. AMSC has no satellites in orbit, has no customers, is providing no service to the public, and is still in the process of defining its system. Nevertheless, AMSC is already seeking additional spectrum for its own use^{4/} while consistently opposing the entry of any competitor into the market. AMSC demands that this valuable spectrum be used for GEO MSS becomes even more incredible in light of the substantial doubt as to whether AMSC will ever provide any service given the D.C. Circuit's ruling on the validity of AMSC's license.^{5/}

B. USE OF THE RDSS BANDS BY THE AMSC GEO SYSTEM IS INCOMPATIBLE WITH RDSS, THE PENDING LEO APPLICATION, AND THE U.S. PROPOSALS TO THE 1992 WARC

In allocating the 1610-1626.5 MHz and 2483.5-2500 MHz bands to RDSS, the Commission took great care in establishing

^{4/} In addition to the 28 MHz of spectrum assigned initially by the Commission to AMSC, it has also requested the assignment of 33 MHz of additional spectrum. See e.g. application File Nos. 7/8/9-DSS-MP/ML-90 and General Docket No. 90-56. AMSC's current request would add another 20 MHz of spectrum to its system.

^{5/} See Aeronautical Radio, Inc. v. FCC, 928 F.2d 428 (D.C. Cir. 1991).

service rules and technical criteria to insure that multiple GEO RDSS systems could operate compatibly in these bands.^{6/} In fact, these rules permitted the Commission to initially license four separate GEO RDSS systems in these bands.

The newly proposed LEO systems are generally compatible with the initial RDSS rules, and are supportive of the United States proposals to enhance the use of the RDSS bands by adding an allocation for compatible MSS systems.^{7/} The Commission can grant the pending LEO systems and still license GEO RDSS systems in the band in the future. These proposed LEO systems represent a new satellite technology that is more advanced than the technology proposed by AMSC in permitting users to employ miniaturized, handheld terminals for personal communications.

Technical studies have concluded that sharing is feasible between LEO systems and GSO RDSS systems, but that the capacity of a GEO MSS system would have to be severely limited

^{6/} While AMSC attempts to identify potential interference problems between LEO systems and other services in the RDSS bands, see e.g., Technical Appendix to AMSC's June 3, 1991 petition, it makes no attempt to demonstrate compatibility of its proposed GSO system with other services. Given the much higher EIRP densities inherently needed in the AMSC GSO system, AMSC's system will produce much more interference than LEO systems to other services in the RDSS bands.

^{7/} See Report in Gen. Docket No. 89-544, FCC 91-188, released June 20, 1991.

if it were to operate in the RDSS bands.^{8/} In fact, an AMSC-type MSS system would have to be limited to only a few tens of kilohertz out of the RDSS band if it were to limit interference to the same level as would be produced by another GEO RDSS system or an LEO system. This restriction on the use of bandwidth is not an efficient use of the spectrum when new LEO systems are technically capable of providing up to thousands of channels while producing even lower levels of interference than AMSC.^{9/}

Given the amount of spectrum already assigned to AMSC,^{10/} there is no public interest to be served in assigning the RDSS bands to GEO MSS systems. To do so would deny the public the opportunity to afford themselves of the potential benefits of LEO technology.

^{8/} See, e.g., CCIR Report, Technical and Operational Bases for the World Administrative Radio Conference 1992 (WARC-92) at 8-21.

^{9/} AMSC's claim, at page 17 of its petition, that it could add 3,600 channels to its system by using the RDSS bands is completely unsupported, and is highly unlikely since no additional satellite power is being added to support these additional channels.

^{10/} AMSC has already been assigned 28 MHz for its system and has yet to make a convincing factual or technical showing that 28 MHz is insufficient or that it can in fact effectively utilize more than this 28 MHz given the limited available satellite power.

C. THE COMMISSION MUST ADHERE TO ITS MULTIPLE ENTRY POLICY IN THE RDSS BANDS.

AMSC's arguments, in essence, are completely dependent on the erroneous view that the Commission has granted AMSC a monopoly for mobile satellite services. As a corollary matter, AMSC contends that its monopoly and the possibility of creating a viable MSS system are in jeopardy due to a lack of frequency for GEO MSS. These claims are wholly without justification.

The Commission has never granted AMSC a monopoly for the provision of space segment for domestic MSS. Nor can the Commission grant AMSC priority rights to any frequency outside the band already specifically assigned to AMSC. Moreover, AMSC has yet to make a factual showing that it can fully utilize the frequencies already assigned to it. Nor has AMSC identified with specificity the constraints on its system that are likely to result from the coordination process.^{11/}

^{11/} AMSC's position is based solely on the claim that more than 35 MSS systems propose to use the 28 MHz assigned to AMSC and that additional allocations are needed for MSS. Petition at 6. This claim is insufficient to justify assignment of additional frequencies to AMSC since all authorizations are issued subject to the results of international frequency coordination. See 47 C.F.R. 25.202. Such coordination has not been completed for the AMSC system and AMSC's claims would appear to undercut the U.S. negotiating position. Moreover, a technical basis exists for the successful coordination of these GSO MSS systems. See e.g. Azarbar, An Upward Compatible Spectrum Sharing Architecture for Existing, Actively Planned and Emerging Mobile Satellite Systems, International Mobile Satellite Conference, Ottawa, 1990 at 456.

CONSTELLATION proposes that the most prudent course for the Commission to follow is to continue to apply the multiple entry policies in the RDSS bands that have worked well in previous licensing proceedings. Multiple LEO systems are technically feasible in the RDSS bands. While there are technical differences between the proposed LEO systems, there is no need for the Commission to involve itself in the technical details of whether and how well a particular satellite system will work in practice. In a competitive market with multiple entry, ill-conceived systems, and those which take unnecessarily risky approaches, will be filtered out by the investment community and potential users. Multiple entry in the RDSS bands also will avoid many of the problems that have occurred in the AMSC mobile satellite service proceeding and should permit the prompt introduction of service while promoting competitive offerings. Multiple entry policies will also avoid the prohibitive cost and delay associated with the proceedings needed to satisfy the high legal and policy standard needed to select a single new licensee or grant AMSC a spectrum monopoly. Consequently, CONSTELLATION believes that the Commission must license competitive offerings of LEO services even if this requires applicants to modify their proposals to accommodate other users.

D. THE COMMISSION SHOULD ADAPT ITS EXISTING RDSS RULES TO
PROCESS THE PENDING LEO APPLICATIONS

In 1986, the Commission established its processing rules for the RDSS service.^{12/} These rules were designed to allow the innovative and emerging RDSS service to evolve. There are four policies that underlie these rules. The first is multiple entry. The Commission indicated in the initial RDSS Licensing Order that multiple entry would "benefit the public by allowing competition in the provision of RDSS services."^{13/} Furthermore, it concluded that while technical efficiency is a desirable goal, "the benefits of competition, including continued innovation will be best provided by independently licensed multiple systems."^{14/} The second is minimal technical parameters for RDSS licensees and a requirement that all RDSS permittees coordinate any technical differences in their systems.^{15/} The Commission believed that this would promote compatible multiple entry and at the same time allow the technology to develop. The third is minimal financial qualifications that allow applicants only to demonstrate that sufficient funds are or will be available to meet the costs of constructing and launching the system and

^{12/} See Second Report and Order, 104 FCC 2d 650 (1986) ("Licensing Order").

^{13/} Id. at 653.

^{14/} Id. at 654.

^{15/} Id. at 661.

operating it for one year.^{16/} This standard is equivalent to that applied in other satellite services where the Commission encourages new entry (e.g. separate systems and direct broadcast satellite) rather than the very stringent requirements applied in the domestic fixed satellite service. The Commission chose not to impose strict financial requirements because RDSS was a new, innovative and as yet unproven service. Fourth, all licensees in the RDSS bands are required to provide radiodetermination services, and may include two-way messaging as an inherent, albeit ancillary, component of RDSS.^{17/}

CONSTELLATION urges the Commission to adapt these existing policies to the pending LEO applications in the RDSS bands. This will allow the prompt processing of the pending applications and insure that service is expeditiously provided to the public. The Commission should also initiate a parallel rulemaking proceeding to adjust basic technical criteria for LEO systems that will enhance and promote the Commission's existing RDSS policies and resolve any conflicts between LEO applications. More specific proposals for the Commission to utilize in processing the pending LEO applications are contained in CONSTELLATION's comments on the TRW Petition for

^{16/} Id. at 664.

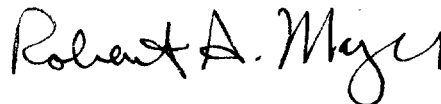
^{17/} See 47 C.F.R. § 25.392(d).

Rulemaking, RM-7773 which were filed today and are incorporated by reference in these comments.

E. CONCLUSION.

In light of the failure of AMSC to establish a justification for the reassignment of RDSS frequencies to the AMSC MSS system and the technical incompatibility of the AMSC system with any LEO system, CONSTELLATION submits that the Commission must reject the AMSC petition and promptly move forward with the licensing of the proposed low earth orbit satellite systems in the RDSS bands. CONSTELLATION submits that licensing of multiple low earth orbit satellite systems in the RDSS bands, such as the ARIES™ system, will best fulfill the Commission's goals of rapidly introducing the benefits of new technology and the competitive provision of service to the public.

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Dated: October 16, 1991

CERTIFICATE OF SERVICE

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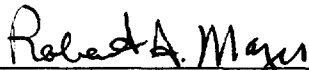
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